Letters to the Editor

Dumpster Diving in Sharps Disposal Containers: What's Really Inside?

To the Editor:

Sharps injuries have plagued healthcare workers (HCWs) since needles were invented, but it was not until the human immunodeficiency virus pandemic that many HCWs took these risks seriously. Until relatively recently, intervention strategies have focused almost exclusively on not recapping used needles as the major strategy to reduce injury risks. This approach historically is based largely on a study conducted at the University of Wisconsin from 1975 to 1979.[1] Almost 20% of injuries reported in that study occurred during needle disposal or while recapping used needles. The investigators believed that installation of more and better needle disposal units, combined with education regarding the risk of recapping, would result in a reduction of injuries from those practices. A 14-year follow-up study[2] found that sharps injuries had not declined with the emphasis on proper disposal and eliminating recapping; in fact, there was a 3.5-fold increase in recapping injuries, and there were over three times as many total injuries per 1,000 HCWs as reported in the 1975 to 1979 period. These investigators concluded that the greatest impact in reducing sharps injuries in HCWs might be by innovative technology-based approaches, but cautioned that most new devices needed critical analysis using epidemiologic methods. As part of a study at the University of California, San Diego Medical Center-Hillcrest Emergency Department to evaluate a safety syringe,[3] we examined the contents of sharps disposal containers and noted the proportion of needles that were recapped.

In the Emergency Department, 14-quart sharps disposal containers were attached near each of the 17 beds, either on the headwall or above the bedside sink counter. Each of the 12 examination rooms also had at least one intravenous-start/blood collection caddy that included a 1.4-quart sharps disposal container. Additional sharps disposal containers were in other strategic locations.

Each day during the study, a member of the study team visited the Emergency Department and replaced any container that was two-thirds to three-fourths full with a new container. Full containers then were filled with a 1:10 solution of sodium hypochlorite and allowed to soak for at least 24 hours. Containers were drained of liquid, and contents were emptied onto a large table in the medical center's trash room. Members of the study team sorted items with long tongs while another team member recorded item counts. Counted contents were discarded as biohazardous waste, in accord with policy.

Data were recorded on a standardized data sheet and input into Epi Info 6.0 (Epi Info, version 6.0, Centers for Disease Control and Prevention, Atlanta, GA) for analysis.

A total of 39 14-quart and 54 1.4-quart sharps disposal containers were collected during the 38-day period. Over 6,800 needled devices were dis-

TABLE

NUMBERS AND TYPES OF NEEDLED DEVICES IN SHARPS DISPOSAL CONTAINERS FROM THE UNIVERSITY OF CALIFORNIA SAN DIEGO MEDICAL CENTER-HILLCREST EMERGENCY DEPARTMENT, JULY 18 TO AUGUST 24, 1994

Device	Total Used*	Recapped	Uncapped	Percentage Recapped
3-cc safety syringe†	390	50*	340	12.8
50/60-cc syringe	123	29	60	23.6
20-cc syringe	162	33	89	20.4
10-cc syringe	790	149	433	18.9
5-cc syringe	732	177	445	24.2
3-cc syringe	636	196	351	30.8
1-cc syringe	281	115	135	48.0
Loose needles	1,357	932	425	68.7
Angiocath stylette	744	79	665	10.6
Blood collection needle	597	431	166	72.2
Spinal needle	114	31	83	27.2
Cartridge with needle	621	170	451	27.4
"Butterfly" needle	306	NA‡	NA	
Totals	6,853	2,392	3,643	35.0

Abbreviation: NA, data not recorded, although the majority were not capped.

* Total used may not equal number recapped plus number uncapped, as some syringes were discarded without needles attached.

† See McCormick RD, Maki DM[1] for description of this device.

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carded in these containers (Table). Almost 2,000 other types of objects (eg, medication vials, glass ampules, scissors, hemostats, sutures, and scalpels) also were discarded. There were approximately 3,800 patient visits to the Emergency Department during the study period, with approximately 230 devices of all types used per day and 2.3 devices used per patient visit.

We found that needle recapping was common, occurring with 10.6% to 72.2% of the needled devices (Table). This likely was an underestimate of actual recapping, as some needle caps came off needles as the container contents were shaken onto the sorting table. On the other hand, some of the capped needles likely had been used to draw up medications, a circumstance in which recapping to change needles is an accepted practice. Some of the other capped needled devices undoubtedly were discarded prior to use. Finally, the proportion of needles that were capped to maintain sterility prior to use was not known.

Following publication of the McCormick and Maki study in 1981,[1] HCWs repeatedly were admonished not to recap used needles, but were frustrated by the lack of appropriate containers at points of use. The HCW often was faced with the dilemma of how to transport a syringe with an uncapped used needle to a disposal container far from the bedside. Recapping in this situation often was viewed as a safer alternative than walking down the hall with an exposed sharp. The two-handed recapping method also was taught routinely in nursing and medical schools, at least until the mid-1980s.

Sharps disposal containers near individual patient beds did not become common until the latter part of the 1980s. A few years later, Jagger and colleagues[4] and Wugofski[5] questioned whether "not recapping" was placing appropriate emphasis, and identified a number of competing priorities when the decision to recap or not to recap was presented to the HCW.

This study has enumerated the many different types of needles and sharps used in a large urban medical center's emergency department over a 38-day period and that over one third of the needles were recapped in some manner prior to disposal. The proportion of appropriate recapping or the methods used is unknown.

This study presents a realistic view of the many different types of devices disposed of daily in a busy emergency department, and the myriad of different devices for which safety designs or work practice modifications are needed if risks for needlestick injuries are going to be reduced. We certainly agree with Jagger et al[4] and with Wugofski[5] that not recapping used needles is much too simple a solution to a very complex problem.

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Educational Needs and Opportunities for the Hospital Epidemiologist

To the Editor:

A number of excellent educational programs are described in the March issue.[1] Additional courses and resources may be found in an annual *Directory of Education,* published in December issues of *Infection Control & Sterilization Technology* (Mayworm Associates, Inc, Libertyville, IL). However, such programs all suffer one well-recognized limitation: the cost of travel, accommodation, and, in the extreme case, temporary relocation, to participate. Conversely, distance-education allows participants to study at times and locations of their own preference. Unfortunately, few distance-education programs related to hospital epidemiology and infection control are available today. The Centers for Disease Control and Prevention (CDC) Distance Learning Program offers a few short courses for which certificates of completion are provided. The possibility of distance-education undergraduate and graduate degree programs for our field has been considered here at the University of British Columbia, and, in partnership with the British Columbia Institute of Technology, one 5-unit undergraduate course has been created. British Columbia Institute of Technology offers ENVH5266 (Advanced Epidemiology and Biostatistics) for an intended audience of public health inspectors and practitioners of hospital infection control or quality assurance and improvement. ENVH5266 provides instruction in methods of epidemiologic investigation, critical appraisal, outbreak investigation (CDC's "Pharyngitis in Louisiana" computer simulation is used as an exercise), and research design. Further information about ENVH5266 may be obtained from British Columbia Institute of Technology, Health Part Time Studies, 3700 Willingdon Ave, Burnaby, BC V5G 3H2, Canada.

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The authors reply

We thank Dr. Birnbaum for his input and course suggestion, as well as his additional references. While researching our article,[1] we limited ourselves mostly to traditional training opportunities in hospital epidemiology and infection control available in the United States. Our suggestions are by no means all inclusive. Finding training opportunities to meet an individual's needs and resources may require a fair amount of research. Our article offers some suggestions of where one should begin, and Dr. Birnbaum has suggested another

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